XL42

OPERATORS MANUAL

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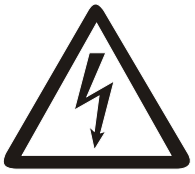
DESIGNED FOR A PURE PERFORMANCE

IMPORTANT SAFETY INSTRUCTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE
AVIS: RISQUE DE CHOC ELECTRIQUE. NE PAS OUVRIR

These symbols are internationally accepted symbols that warn of potential hazards with electrical products.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments / accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified personnel. Servicing is required when the apparatus is damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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DECLARATION OF CONFORMITY

We, **Klark Teknik Group (UK) PLC**

of, Klark Teknik Building, Walter Nash Road, Kidderminster, Worcestershire, DY11 7HJ

Declare that a sample of the following product:-

Product Type Number	Product Description	Nominal Voltage (s)	Current	Freq
XL42	Dual Channel Strip	230V/115V	70mA / 140mA	50/60Hz

to which this declaration refers, is in conformity with the following directives and/or standards:-

Directive(s)	**Test Standard(s)**
89/336/EEC Electromagnetic Compatibility Directive amended by 92/31/EEC & 93/68/EEC 73/23/EEC Low Voltage Directive amended by 93/68/EEC	
Generic Emissions Standard	EN55013:1990
Generic Immunity Standard	EN50082:1992
Electrical Safety	UL6500-03(Pending at time of publication)
	E60065-03(Pending at time of publication)
	EN60065:2002(Pending at time of publication)

Signed:..... Date: 7th May 2004

Name: Simon Harrison

Authority: Research & Development Director, Klark Teknik Group (UK) PLC

Attention!
Where applicable, the attention of the specifier, purchaser, installer or user is drawn to special limitations of use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request and are availablein product manuals.

Thank You for using a Midas XL42 dual channel creative equaliser. The XL42 has been developed to meet the needs of demanding live sound engineers and meets the quality of build and performance that you would expect from a Midas.

The XL42 is backed up by the standard Midas Three Year Warranty.

Please take the time to complete and return the registration card. In view of this flexibility, we hope that you will spend a little time reading through this operator's manual, as this will allow you to obtain the best results from your XL42 with a minimum of effort.

Finally,

Enjoy your new Midas XL42!

Contents

Introduction	Page 1
Before you start	Page 2
After you Unpack	Page 3
Front Panel	Page 5
Input Section	Page 6
EQ Section	Page 7
Output Section	Page 8
Rear Panel	Page 9
System Connection	Page 13
Auto-mute Operation	Page 14
Daisy Chain Operation	Page 15
Technical Specification	Page 17

Introduction

The Midas XL42 is a 1U rack mounting, dual channel creative equaliser incorporating the XL4 four-band parametric equalisation and XL4 mic/line preamplifiers with +48V phantom power.

Each channel has input gain, output level and pan rotary controls, 10-segment metering LED plus a switchable insert send and return point. The XL42 also features Automute scene control from the Automute masters of XL consoles which are enabled by DIP switches on the rear of the unit.

The purpose of this unit is threefold:

1. To improve the audio quality of an inferior console by adding a Midas mic preamp and EQ.
2. To create custom mixing consoles through the ability to daisy-chain multiple units. When linked together, the combined outputs will sum, producing discrete L&R channels.
3. If a production requires, for example, 10 channels more than the input capacity of the master console, five XL42's can be fitted in a standard rack together with any required dynamic processing, which can be inserted via the XL42's insert points, thus creating a custom 10 into 2 mixer via the output daisy chain feature. The resulting L&R outputs may then be routed to the master console via any convenient point i.e. a pair of aux returns, group inputs, matrix inputs etc.

As a stand-alone unit, the XL42 is ideally suited to applications requiring a high quality front end, such as stereo recording etc.

Installation Precautions

Do not install this unit in a location subjected to excessive heat, dust or mechanical vibration. Allow for adequate ventilation around the unit, making sure the unit's vents are not obstructed. To avoid excessive heating of the unit, avoid mounting the unit directly above power amplifiers or other devices that radiate significant amounts of heat. Where necessary, use fan-cooled racks.

Voltage Selection and Power Connection

Mains power to the XL42 is supplied by means of a standard fused IEC power socket. The XL42 is designed to operate at nominal mains voltages of 115V and 230V V a.c. at either 50 or 60 Hz, however upon first use (and whenever the mains supply is changed) the input voltage selector on the rear of the unit must be set to reflect the local power supply. This information is also printed on the rear of the unit below the mains inlet socket.

This device must be earthed and must use an approved mains fuse. Before connecting to the mains supply, ensure the fuse fitted is the correct type and rating as indicated on the rear panel, adjacent to the fuse holder and that the correct mains supply voltage is selected.

Safety Warning

To completely disconnect this equipment from the AC Mains, turn the power switch to the off position. The power switch shall remain readily operable.

Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.

For safety reasons the earth lead for this unit should never be disconnected. In the event of ground loop problems, under no circumstances must the mains earth be removed. Instead, disconnect the signal screen at one end of the connecting cables.
N.B. This can only be done when the unit is being used within a balanced system.

To prevent shock or fire hazard, do not expose the unit to rain or moisture. To avoid electrical shock do not remove covers. Refer servicing to qualified personnel only.

Attention! Cables

The inputs and outputs are balanced on conventionally wired XLRs (pin 1 screen, pin 2 hot and pin 3 cold). This product should only be used with high quality, screened twisted pair audio cables, terminated with metal-bodied 3-pin XLR connectors. Any other cable type or configuration for the audio signals may result in degraded performance due to electromagnetic interference.

Note that +48V phantom power can only be used with balanced cables.

Electric Fields

Should this product be used in an electromagnetic field that is amplitude modulated by an audio frequency signal (20Hz to 20kHz), the signal to noise ratio may be degraded. Degradation of up to 60dB at a frequency corresponding to the modulation signal may be experienced under extreme conditions (3V/m, 90% modulation).

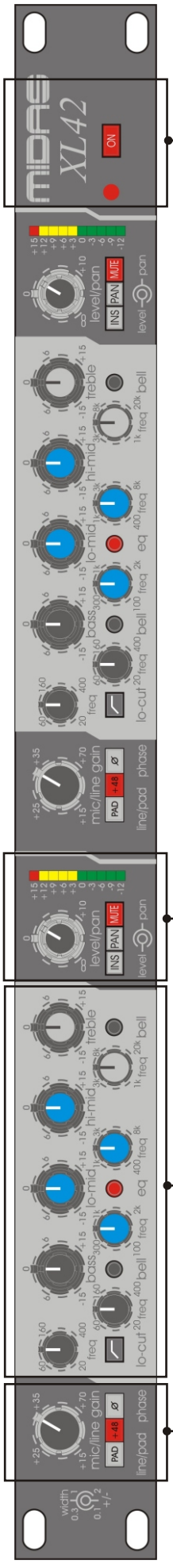
No permanent damage or degradation of performance will be caused by these conditions.

After You Have Unpacked the Unit

Before unpacking the XL42 check packaging for signs of damage, as this could be a sign of damage to the unit inside. After unpacking the XL42 check the unit for signs of damage to the casing. Damage to consignments must usually be reported to the courier within 24 hours in order for a claim to be made.

Please retain the packaging for your XL42 as it will become useful should you need to transport the unit.

Please also retain the XL42's operators guide (this manual) and any other associated documentation.



The XL42 is a highly featured 1U 19" rackmount dual channel strip.The unit is split into two identical channel strips, each with identical function but having independent inputs and outputs.

Mains switch

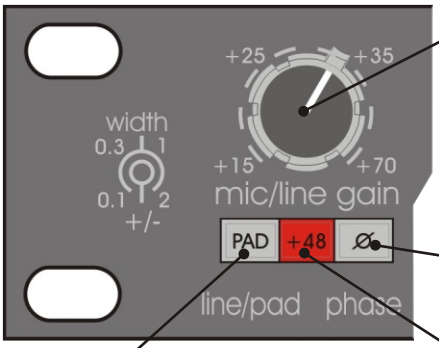
The mains switch is a conventional latching type switch, which is on when depressed. The action of the switch is firm but does not require excessive force, which may damage the unit. A red LED is provided to the left of the power switch to indicate that the XL42 is receiving mains power.

Output section

EQ section

Input section

Input section



The Mic/Line gain knob gives a continuously variable input gain control depending upon the input selected.

Microphone: +15dB to +70dB Gain
Microphone : -10dB to +45dB
(PAD enabled)

The Phase switch inverts the input signal by applying a 180-degree phase shift.

The PAD line/switch provides 25dB of attenuation to the input signal and allows the connection of high output microphones or line level signals. If the using the XL42's optional transformer-coupled input, the pad greatly reduces the risk of saturation at very low frequencies.

A +48 volt Phantom Power switch is provided to allow the connection of devices that require phantom power (i.e. Condenser Microphones, D.I. Boxes etc.).

EQ section

The Bass, Lo-Mid, Hi-Mid and Treble bands use dual concentric rotary controls. The outside ring controls the band cut and boost in the range -15dB to +15dB. The inner ring of the dial controls the bandwidth of the filter in the range 0.1 to 2 octaves (with a centre detent at 0.5 octave).

Bass Band Gain/Attenuation (outside ring). Bass bandwidth (inside ring activated when Bell 9 - is selected).

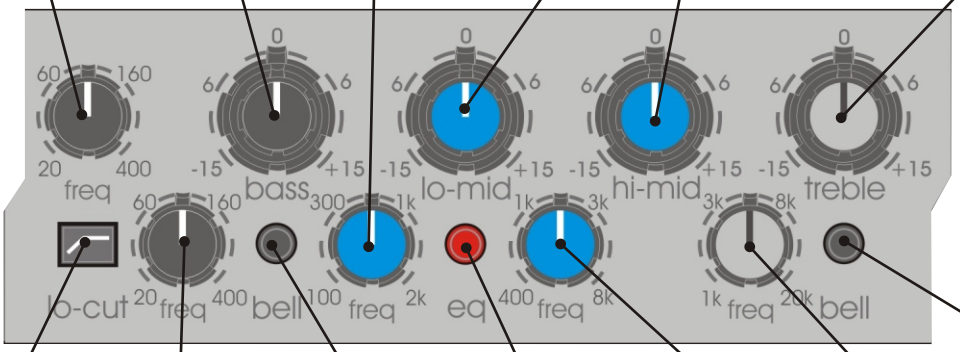
Lo-Mid Band Gain/Attenuation (outside ring). Lo-Mid bandwidth (inside ring).

Treble Band Gain/Attenuation (outside ring). Treble bandwidth (inside ring, activated when Bell is selected).

The Lo-Cut control selects the HPF frequency and is continuously variable from 20Hz to 400Hz. The Lo-Cut filter is enabled by pressing the Lo-Cut switch.

The Lo-Mid FREQUENCY control selects the frequency at which the lo-mid equaliser band acts and is continuously variable from 100Hz to 2KHz.

Hi-Mid Band Gain/Attenuation (outside ring). Hi-Mid bandwidth (inside ring).



The Lo-Cut Switch is a conventional latching switch where the filter is enabled when the switch is depressed.

The Bass FREQUENCY control selects the frequency at which the bass equaliser band acts and is continuously variable from 20Hz to 400Hz.

The Bass Band BELL switch enables or disables the Parametric EQ for the bass band. The Bell switch is a conventional latching switch - when depressed the equaliser band will work in full parametric mode, otherwise the equaliser band will act like a traditional MIDAS shelving response EQ.

The EQ Switch enables or disables the equaliser in the signal path. (This parameter is automatable).

The Hi-Mid FREQUENCY control selects the frequency at which the hi-mid equaliser band acts and is continuously variable from 400Hz to 8kHz.

The Treble FREQUENCY control selects the frequency at which the treble equaliser band acts and is continuously variable from 1KHz to 20KHz.

The Treble Band BELL switch enables or disables the Parametric EQ for the treble band. The Bell switch is a conventional latching switch - when depressed the equaliser band will work in full parametric mode, otherwise the equaliser band will act like a traditional MIDAS shelving response EQ.

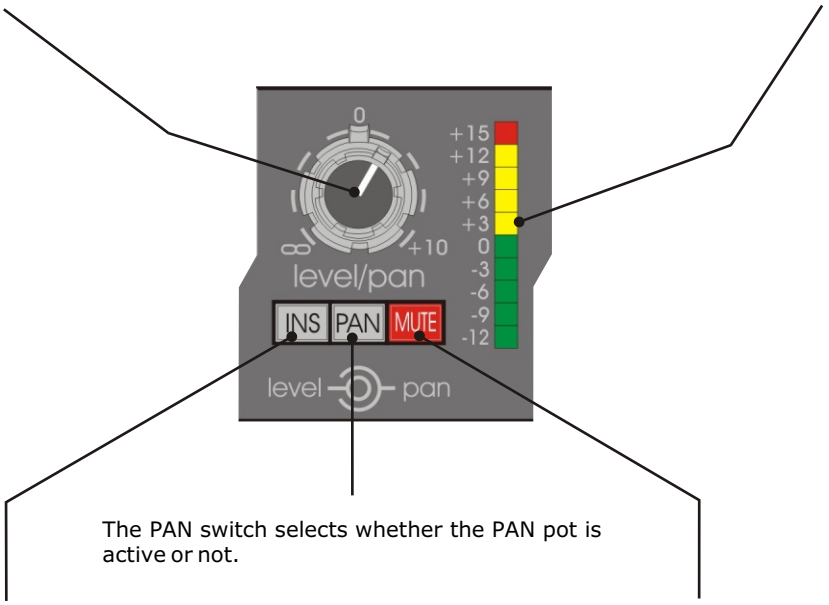
Output section

The pan control places the input within a stereo (Left/Right) mix. The pan control has a constant power law such that at it's centre position, each output is attenuated by 3dB. The Pan control is enabled by the PAN switch (19). With the PAN switch disabled, the XL42 is essentially two independent channel strips. With Pan enabled, output signal from each input strip is distributed between the two outputs.

The output level (inner ring on dial) controls the output level in the range infinity to +10dB.

Note: When using the Link inputs, the link input may be pre- or post-output level control.

The output peak level meter monitors the level of the channel. By default, this is post output level and pan, however this may be internally set to be pre-level, pan and insert.



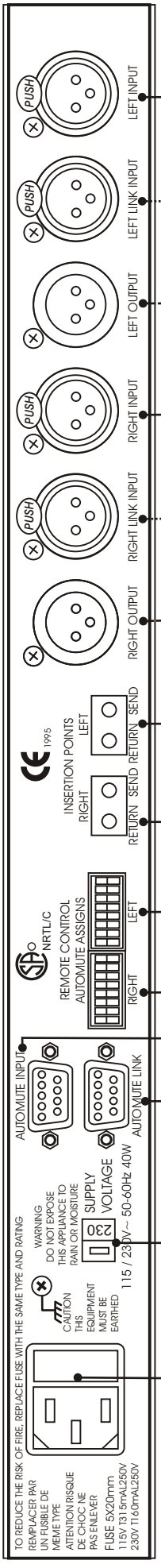
The PAN switch selects whether the PAN pot is active or not.

The INSERT (INS) switch selects whether the input insert return signal is routed to the input channel before or after equaliser stage.

The MUTE switch mutes the channel outputs. The mute may also be controlled via the Automute link which is selected using DIP switches on the rear panel

Note: The Link input can be internally jumpered to be pre or postmute. The default state is:- link input bypasses mute.

The XL42 rear panel houses both the input and output sockets as well as the insert points, remote control and Automute sockets and power inlet and selector.



Left / Right Input

Left / Right Link Input

Left / Right Output

Left / Right Insertion Points

Remote Control Automute Assigns

Automute Input / Automute Link

Supply Voltage

IEC Power Inlet

Your XL42 should come complete with the correct IEC mains lead for the country in which it was intended for sale. If replacing the mains lead, replace with a recommended part and ensure that the fuse is of the correct type.

The XL42 must be earthed.

Left / Right Link Input

When used in a daisy chain, the Link Input is summed with the output from the XL42's input channels to the output so that the daisy chain may continue. A much larger console can be created by adding extra XL42s using the output from the last XL42 in the chain as the master output.

Input Impedances: 20kOhm Balanced
Max Input Level: +21dBu

Left/Right Insertion Points

The insert points can be used to add additional processing into the signal path (e.g. Dynamics Processors, Graphic EQ, Effects, etc.).

Input Impedances: 20kOhm Balanced
Max Input Level: +21dBu

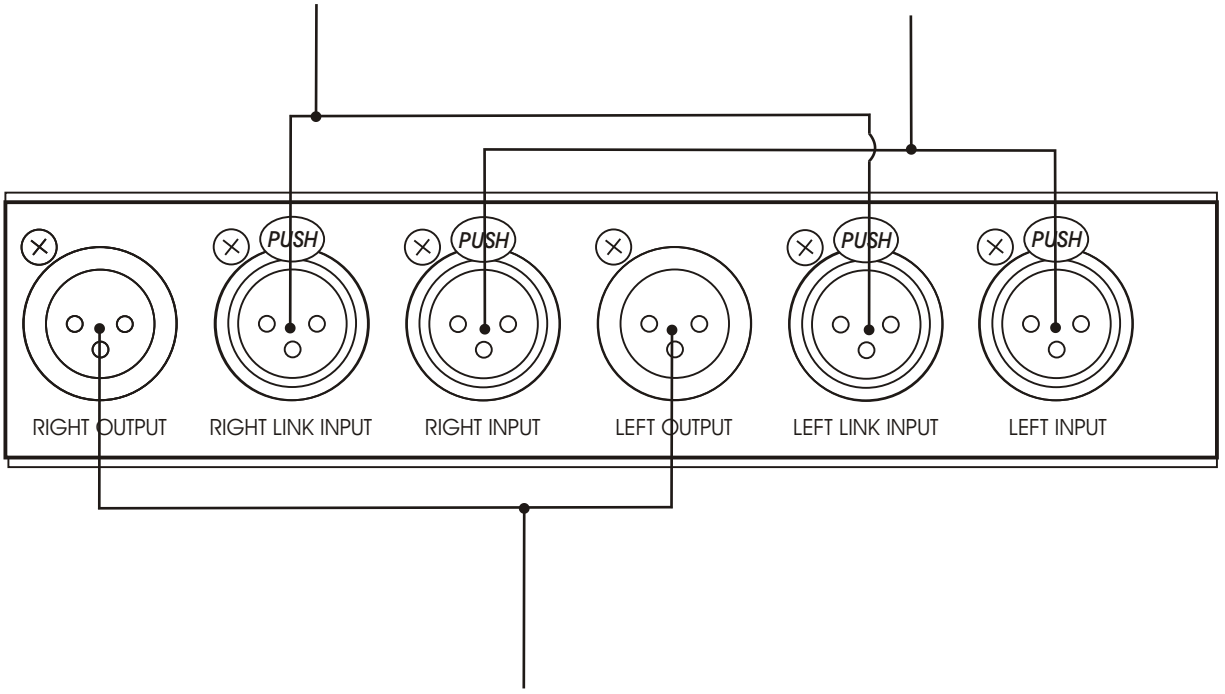
The insert send and return are on independent balanced jacks.

Left / Right Input

Balanced XLR input to the channel strip from Microphones, D.I. Boxes, Line etc.

Input Impedances: Mic 2kOhm Balanced
Mic (with Pad) 3kOhm Balanced

Max Input Level: Mic +6dBu
Mic (with Pad) +26dBu



Left / Right Output

Balanced XLR output from the Channel Strip.

The Output signal will be a combination of the LINK input plus the output from the XL42's input channels. If PAN is selected on either of the inputs, the outputs will be a stereo combination of the input channels PLUS the LINK input. If pan is disabled on the channels, the output will be a combination of the input channel and the LINK input only.

It is worth noting here, that if one input channel has PAN enabled and one does not, the channel with pan enabled obeys the PAN law of the pan pot, however no signal is introduced into the other output. Only when both channel PAN switches are enabled does the unit enter full stereo mode (i.e. either output can be a combination of either input).

Max Output Level: +21dBu

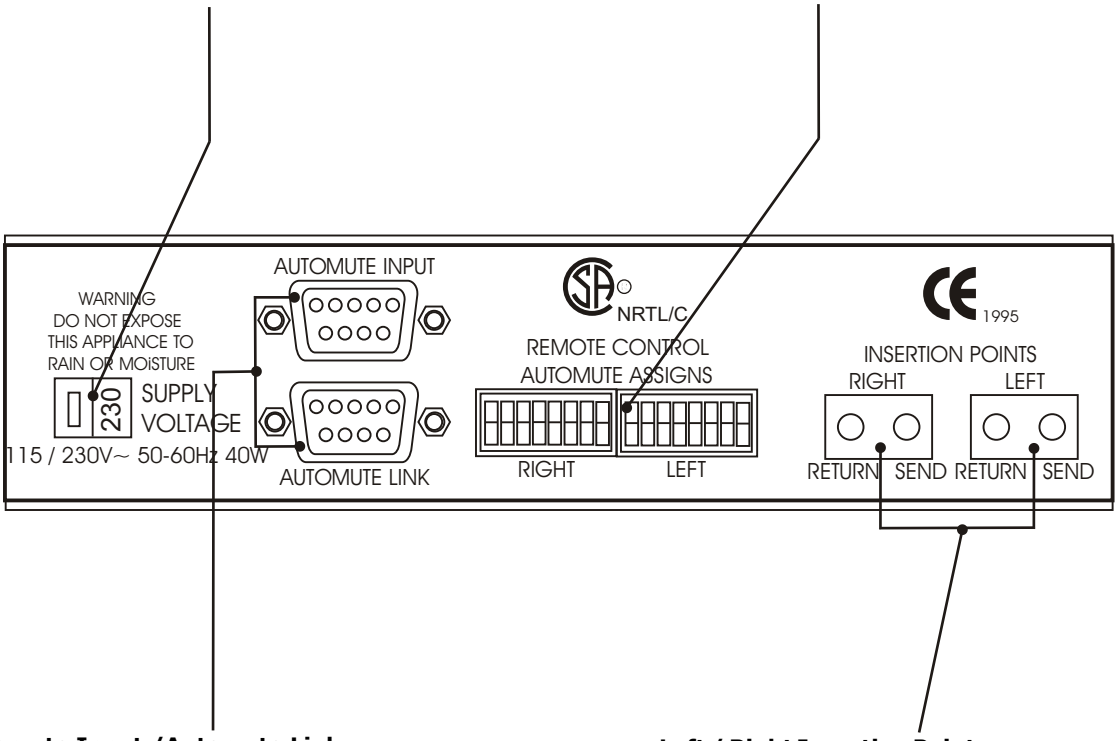
Supply Voltage

The supply voltage is switchable between 115VAC and 230VAC depending upon the mains power supply available in the country in which the unit is to be used.

Note: The supply voltage selector must be set before plugging the unit into the mains. Under NO CIRCUMSTANCES should the switch be changed whilst the unit is plugged in.

Remote Control Automute Assigns

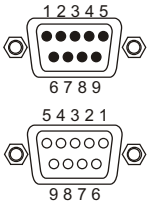
The 9-pin plug for the Automute system allows up to 8 Automute channels. The input channels of the XL42 can be set to mute on one of these 8 Automute channels by switching on the corresponding channel number on the DIP switch for the XL42's input channels.



Automute Input /Automute Link

The Automute input should be wired according to the following diagram. The Automute link socket can be used to extend the Automute connection to other XL42s in the daisy chain.

Automute Connection Details



Pin 1 Automute 1
Pin 2 Automute 2
Pin 3 Automute 3
Pin 4 Automute 4
Pin 5 Automute 5
Pin 6 Automute 6
Pin 7 Automute 7
Pin 8 Automute 8
Pin 9 Common

Left / Right Insertion Points

The insert points can be used to add additional processing into the signal path (e.g. Dynamics Processors, Graphic EQ, Effects, etc.).

Input Impedances:	20kOhm Balanced
Max Input Level	+21dBu

The insert send and return are on independent balanced jacks.

The XL42 is a versatile expansion to any system, or a complete system on it's own.

Use it:-

As a **replacement to an inferior mic preamp**

- Plug the microphone or D.I. Box into the XL42 and the output into the line input of your console. You can also use the XL42 EQ and bypass your consoles EQ. Set PAN off for mono operation or enabled for stereo operation.

As a **better EQ** section for your console

- Plug the XL42 into the insert point of your console (Desk send to XL42 Input, XL42 Output to Desk Return). Set the XL42 PAD/Line switch in for a line level signal.

As an **expansion** to your console

- Plug a daisy chain of XL42s together and the outputs from the last XL42 into a stereo (or two mono) channel on your console or into a stereo/effects return.

As a High Quality **Pre-amp and EQ**

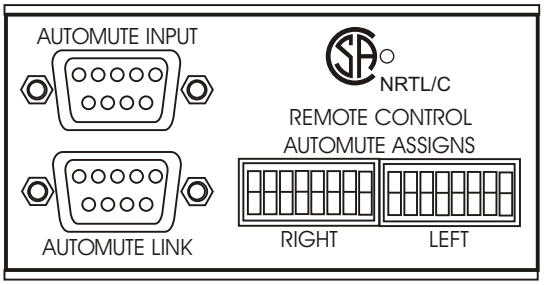
- Plug your microphones (Maybe a stereo Condenser Pair for recording) into the XL42 and the outputs into a DAT, CD or hard Disk recorder.

The XL42 is the perfect companion for any system and could even be used for computer audio or drum submixing where a high quality Pre-amp and EQ is required.

The XL42 can be used within an Automute system. The standard 9-Pin plug can control up to 8 independent mono channels, each of which can be addressed by the XL42.

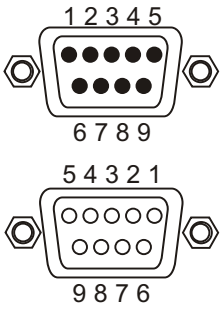
To assign an Automute address for each channel, the REMOTE CONTROL AUTOMUTE ASSIGNS should be turned on for the desired Automute address.

i.e. LEFT ASSIGN 2 would make the left hand channel of the XL42 mute on channel 2 of the Automute system.



Each channel may be assigned to more than one Automute channel simply by switching each of the desired DIP switches.

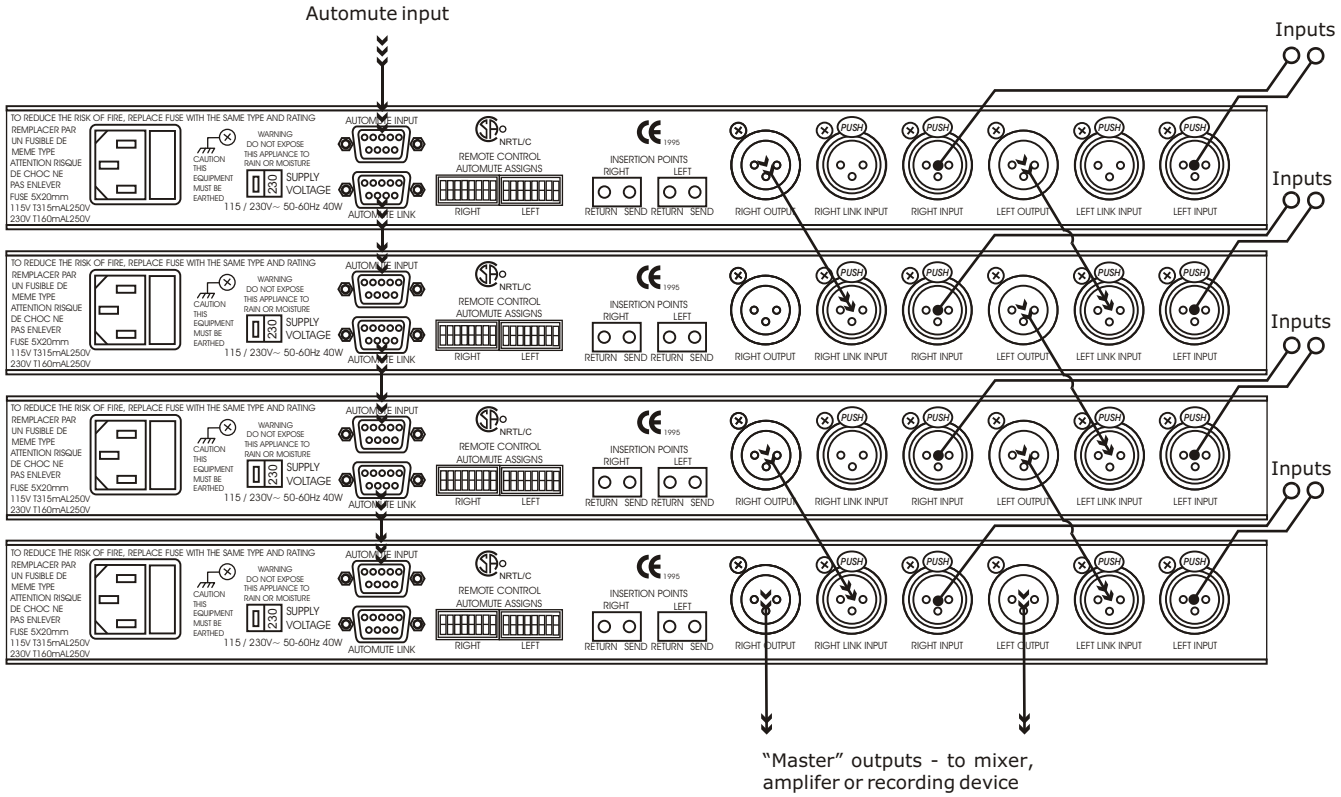
The Automute plugs are wired as follows:



Pin 1 Automute 1
Pin 2 Automute 2
Pin 3 Automute 3
Pin 4 Automute 4
Pin 5 Automute 5
Pin 6 Automute 6
Pin 7 Automute 7
Pin 8 Automute 8
Pin 9 Common

The XL42 Automute system is compatible with all MIDAS XL series consoles, hence the XL42 is an ideal expansion to an XL series console when extra channels are required.

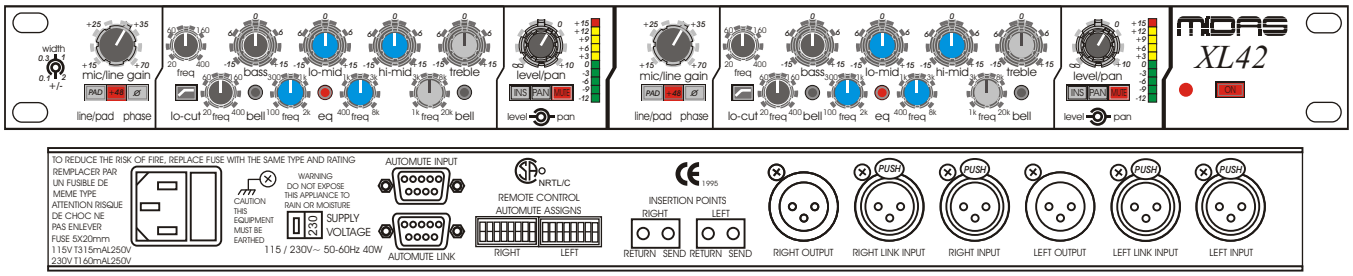
A number of XL42s can be daisy-chained together to form a larger console or to expand an existing console (32 channels of XL quality EQ and Mic Pre's will fit into a 16U).



As shown in the diagram, each channel has it's own input plus the output from the previous XL42 so that at the last point of the chain, the output is a combination of each input.

Depending upon how each channel PAN is used, this may be a stereo image or all the left hand channels grouped and all the right hand channels grouped.

Optionally, you may wish to use the Automute feature, here the output from the master console (any MIDAS XL series) is inserted at the top of the chain and linked into each unit.



Input Impedance

Mic	2kOhm Balanced
Mic + Pad	3kOhm Balanced
Link & Insert	20kOhm Balanced

Input Gain (all faders at 0dB)

Mic	Continuously variable from +15dB to +70dB
Mic + Pad	Continuously variable from -10dB to +45dB
Link & Insert	0dB

Maximum Input Level

Mic	+6dBu
Mic + Pad	+26dBu
Link & Insert	+21dBu

CMR at 1kHz

Mic (gain + 60dB)	>70dB
Mic + Pad (gain +35dB)	>50dB
Link & Insert	>60dB

Frequency Response (20 to 20kHz)

Any input	+0dB to -1dB

Noise (20 to 20kHz)

Mic EIN ref. 150 Ohm (gain + 60dB)	-129dBu
Transformer Mic Input EIN ref. 150 Ohm (gain + 60dB)	-127dBu
System Noise at 0dB (one channel only)	-88dBu

System Noise (20 to 20kHz)

Summing Noise (12 channels routed with faders down)	-83dB
Line to Mix Noise (12 channels routed at 0dB, pan centre)	-81dB
Summing Noise (48 channels routed with faders down)	-81dB
Line to Mix Noise (48 channels routed at 0dB, pan centre)	-75dB

Distortion at 1kHz

Mic (+ 60dB gain, 0dBu output)	<0.03%
Link (0dBu)	<0.03%

Output Impedance

All Outputs	50 Ohm Balanced Source to drive >600 Ohm

Maximum Output Level

All Outputs	50 Ohm Balanced Source to drive >600 Ohm

Metering

Type	10 Segment LED Bargraph - Peak Reading

Equaliser

Hi pass slope	12dB/Oct
Hi pass frequency	Continuously variable -3dB point from 10Hz to 400Hz
Treble Gain	Continuously variable +15dB to -15dB Centre detent = 0dB
Treble Shelving Freq.	Continuously variable - 3dB point from 1k to 20k
Hi Mid Gain	Continuously variable +15dB to -15dB Centre detent = 0dB
Hi Mid Freq.	Continuously variable centre from 400Hz to 8k
Hi Mid Bandwidth	Continuously variable 0.1 Oct. to 2 Oct.
Lo Mid Gain	Continuously variable +15dB to -15dB Centre detent = 0dB
Lo Mid Freq.	Continuously variable centre from 100Hz to 2k
Lo Mid Bandwidth	Continuously variable 0.1 Oct. to 2 Oct Centre detent = 0.5 Oct
Bass Gain	Continuously variable +15dB to -15dB Centre detent = 0dB
Bass Shelving Freq.	Continuously variable - 3dB point from 20Hz to 400Hz
Bass Bell Freq.	Continuously variable centre from 20Hz to 400Hz
Bass Bell Bandwidth	Continuously variable 0.1 Oct. to 2 Oct Centre detent = 0.5 Oct

Automute System

Channel Quantity	8
Mute ON Voltage	+3 to +20V
Mute Off Voltage	-20 to +2V
Mute Line Load	>500kOhm

Power

Nominal Mains Voltage	115V/230V
Mains Consumption	40W
Phantom Voltage Supply	+48V ± 5%
Maximum Phantom Current	<10mA

Dimensions

Width	482mm (19 inches)
Depth	250mm (10 inches)
Height	44mm (1.75 inches)

Weight

Nett	3kg
Shipping	4kg

Options

Mic Transformer	Factory-Fit Only
Output Transformer	Factory-Fit or Retrofit

Notes

Midas XL42 Operators Manual
Issue 1 - May 2004
DOC02-XL42
(c) Klark Teknik Group (UK) PLC.

In line with the company's policy of continual improvement, specifications and function may be subject to change without notice. The contents of this Operators Manual was correct at the time of writing. E&OE.